MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

MATHEMATICS STANDARD ARTICULATED BY GRADE LEVEL				
Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Number Sense	1	Connect model, number word, and/or number using various models and representations for whole numbers, fractions, and percents.	5	Construct models to represent place value concepts for the one's, ten's, hundred's, and thousand's places.
			6	Apply expanded notation to model place value (e.g., 203,495 = 200,000 + 3,000 + 400 + 90 + 5).
			10	Identify symbols, words, or models that represent mixed numbers.
	2	Identify the place value and actual value of digits for whole numbers and decimals to hundredths.	1	Read whole numbers in contextual situations.
			2	Identify whole numbers in or out of order.
			3	Write whole numbers in or out of order.
			4	State place values for whole numbers (e.g., In the number 203,495 what is the value of the 2?).
			5	Construct models to represent place value concepts for the one's, ten's, hundred's, and thousand's places.
			6	Apply expanded notation to model place value (e.g., 203,495 = 200,000 + 3,000 + 400 + 90 + 5).
			7	Compare two whole numbers.
			8	Order three or more whole numbers.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

		Strand 1: Number and Operations			
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**	
1. Number Sense	3	Compose and decompose numbers using factors and multiples.	18	Identify all whole number factors and pairs of factors for a given whole number through 144.	
			19	Determine multiples of a given whole number with products through 144.	
	4	Express fractions as: • fair sharing parts of wholes, • parts of a set, and • locations on a number line.	9	Make models that represent mixed numbers.	
			10	Identify symbols, words, or models that represent mixed numbers.	
			11	Use mixed numbers in contextual situations.	
	5	Use simple ratios to describe problem situations in context.*			
	6	Compare and order (<,>, =, ≥, ≤) decimals or fractions in contextual or non-contextual situations.	12	Compare two unit fractions (e.g., ½ to 1/5) or proper or mixed numbers with like denominators.	
			13	Order three or more unit fractions or proper or improper fractions with like denominators.	
			15	Compare two decimals.	
			16	Order three or more decimals.	
			17	Determine the equivalency among decimals, fractions, and percents (e.g., 49/100 = 0.49 = 49%).	

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

		Strand 1: Number and Operations			
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**	
1. Number Sense	M04-S1C2-01	**Moved to Strand 1 Concept 2**	14	Use decimals in contextual situations.	
	M04-S1C2-05	**Moved to Strand 1 Concept 2**	18	Identify all whole number factors and pairs of factors for a given whole number through 144.	
			19	Determine multiples of a given whole number with products through 144.	
2. Numerical Operations	1	Add and subtract decimals through hundredths and fractions with like denominators accurately, efficiently, and flexibly in contextual and non-contextual situations.	4	Solve word problems using grade-level appropriate operations and numbers.	
			12	Add or subtract fractions with like denominators, no regrouping.	
			S1C1-14	Use decimals in contextual situations.	
	2	Use multiple strategies to multiply whole numbers accurately, efficiently, and flexibly in contextual and non-contextual situations: • two-digit by two-digit and • multi-digit by one-digit.	3	Select the grade-level appropriate operation to solve word problems.	
			4	Solve word problems using grade-level appropriate operations and numbers.	
			5	Multiply multi-digit numbers by two-digit numbers.	

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards   Draft 02/25/08

Strand 1: Number and Operations				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Numerical Operations	3	Use multiple strategies to divide whole numbers accurately, efficiently, and flexibly in contextual and non-contextual situations (i.e., three-digit by one-digit).	3	Select the grade-level appropriate operation to solve word problems.
			4	Solve word problems using grade-level appropriate operations and numbers.
			6	Divide with one-digit divisors.
	4	Apply associative and distributive properties to solve multiplication and division problems in contextual and non-contextual situations.	3	Select the grade-level appropriate operation to solve word problems.
			4	Solve word problems using grade-level appropriate operations and numbers.
			8	Demonstrate the associative property of multiplication.
			9	Apply grade-level appropriate properties to assist in computation.
	5	Use multiple strategies to develop fluency of multiplication and division fact families through 12s.	7	State multiplication and division facts through 12s.
			S1C1-18	Identify all whole number factors and pairs of factors for a given whole number through 144.
			S1C1-19	Determine multiples of a given whole number with products through 144.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

Strand 1: Number and Operations				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
2. Numerical Operations	6	Apply order of operations with whole numbers.	13	Simplify numerical expressions using the order of operations with grade-appropriate operations on number sets.
		REMOVED	1	Add whole numbers.
		REMOVED	2	Subtract whole numbers.
		REMOVED	10	Apply the symbol: • and ( ) for multiplication, and ≤, ≥ .
		REMOVED (This skill is required throughout the standard).	11	Use grade-level appropriate mathematical terminology.
3. Estimation	1	Use the benchmarks (zero, quarter, half, and whole) as meaningful points of comparison for whole numbers, decimals, and fractions in and out of context.*		

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Strand 1: Number and Operations				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
3. Estimation	2	Make an estimate for quantities and the results of computations with whole numbers and fractions by: • knowing when to estimate, • selecting the appropriate type of estimation, • selecting and using a variety of estimation strategies, and • verifying solutions or determining the reasonableness of results in meaningful contexts.	1	Solve grade-level appropriate problems using estimation.
			2	Use estimation to verify the reasonableness of a calculation (e.g., Is 3284 x 343 = 1200 reasonable?).
		REMOVED	3	Estimate length and weight using both U.S. customary and metric units.
		REMOVED	4	Estimate and measure for distance.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Draft 02/25/08

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Data Analysis (Statistics)	1	Collect, generate, organize, and display data: • double bar graph, • single line graph, and • circle graph.	2	Construct a single-bar graph, line graph or two-set Venn diagram with appropriate labels and title from organized data.
			3	Interpret graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
	2	Analyze and formulate questions from displays of data and solve problems by estimating and computing within a set of data.	1	Formulate questions to collect data in contextual situations.
			4	Answer questions based on graphical representations and data displays including single-bar graphs, circle graphs, two-set Venn diagrams, and line graphs that display continuous data.
			6	Formulate predictions from a given set of data.
			7	Solve contextual problems using graphs, charts, and tables.
	3	Use median to describe the distribution of the data, given a set of data or a graph.*		

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards   Draft 02/25/08

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
	4	Compare two sets of related data.*		
1. Data Analysis (Statistics)		**REMOVED**	5	Identify the mode(s) of given data.
2. Probability	1	Describe elements of theoretical probability: • list or draw all possible representations of a given situation or event,; • predict the outcome using "more likely," "less likely," "equally likely," or "unlikely;" and • determine a simple probability from a context that includes a picture.	1	Name the possible outcomes for a probability experiment.
			2	Describe the probability of events as being more likely, less likely, equally likely, unlikely, certain, impossible, fair or unfair.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
2. Probability	2	Demonstrate elements of experimental probability: • predict outcomes using charts and tree diagrams, • perform experiments, • record data from a given situation or event, and • compare the outcome to the prediction.	1	Name the possible outcomes for a probability experiment.
			3	Predict the outcome of a grade-level appropriate probability experiment.
			4	Record the data from performing a grade-level appropriate probability experiment.
			5	Compare the outcome of an experiment to predictions made prior to performing the experiment.
			6	Make predictions from the results of student-generated experiments using objects (e.g., coins, spinners, number cubes).
			7	Compare the results of two repetitions of the same grade-level appropriate probability experiment.
3. Discrete Mathematics – Systematic Listing and Counting	1	Explain the multiplication principle of counting.*		

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

Strand 2: Data Analysis, Probability, and Discrete Mathematics				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
3. Discrete Mathematics – Systematic Listing and Counting	2	Construct tree diagrams to solve problems in context by: • representing how its properties relate to the problems, • explaining how its properties relate to the problem, • representing the same counting problem in multiple ways, and • drawing conclusions*		
		REMOVED	1	Find all possible combinations when one item is selected from each of two sets containing up to three objects (e.g., How many outfits can be made with 3 pants and 2 tee shirts?).
4. Discrete Mathematics – Vertex-Edge Graphs	1	Construct and color graphs that represent conflicts.*		
	2	Draw vertex-edge graphs to represent concrete situations and identify paths and circuits.*		

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards   Draft 02/25/08

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

		Strand 2: Data Analysis, Probability, and Discrete Mathematics		
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
4. Discrete Mathematics – Vertex-Edge Graphs		**REMOVED**	1	Color maps with the least number of colors so that no common edges share the same color (increased complexity throughout grade levels).

		Strand 3: Patterns, Algebra, and Functions		
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Patterns	1	Create, describe, and extend numerical patterns involving whole numbers using all four basic operations.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
			2	Extend a grade-level appropriate iterative pattern.
			3	Create grade-level appropriate iterative patterns.
	2	Find the missing term and explain the rule, given a pattern or sequence.	1	Communicate a grade-level appropriate iterative pattern, using symbols or numbers.
2. Functions and Relationships	1	Recognize and describe a relationship in which quantities change proportionally using words, pictures, and expressions.	1	Describe the rule used in a simple grade-level appropriate function (e.g., T-chart, input/output model).

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards   Draft 02/25/08

11

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

<table>
<tr><th colspan="5">Strand 3: Patterns, Algebra, and Functions</th></tr>
<tr><th>CONCEPT</th><th>2008 PO</th><th>ITEM DESCRIPTION</th><th>2003 PO</th><th>ITEM DESCRIPTION</th></tr>
<tr><td>2. Functions and Relationships</td><td>2</td><td>Translate between the different representations including symbolic, numerical, verbal, or pictorial of whole number relationships.*</td><td></td><td></td></tr>
<tr><td>3. Algebraic Representations</td><td>1</td><td>Use variables to represent an unknown quantity in a simple mathematical expression involving all operations.</td><td>1</td><td>Evaluate expressions involving the four basic operations by substituting given whole numbers for the variable.</td></tr>
<tr><td></td><td>2</td><td>Create and solve equations with one variable involving multiplication and division of whole numbers.</td><td>2</td><td>Use variables in contextual situations.</td></tr>
<tr><td></td><td></td><td></td><td>3</td><td>Solve one-step equations with one variable represented by a letter or symbol using multiplication of whole numbers (e.g., $12 = n \times 4$).</td></tr>
<tr><td>4. Analysis of Change</td><td>1</td><td>Identify the change in a variable over time and make simple predictions.</td><td>1</td><td>Identify the change in a variable over time (e.g., an object gets taller, colder, heavier).</td></tr>
<tr><td></td><td></td><td></td><td>2</td><td>Make simple predictions based on a variable (e.g., increase homework time as you progress through the grades).</td></tr>
</table>

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	1	Justify which objects in a collection match a given geometric description.	1	Identify the properties of 2-dimensional figures using appropriate terminology.
	M03-S4C1-04	**Moved to Grade 3**	7	Identify similar shapes.
	2	Draw and describe the relationships between points, lines, line segments, rays or angles including parallelism and perpendicularity.	3	Draw points, lines, line segments (open or closed endpoints), rays, or angles.
	3	Recognize the relationship between a 3-dimensional figure and its corresponding net(s): • make a net(s) for a basic 3-dimensional figure, • identify the 3-dimensional figure that corresponds to a given net, and • identify the net that corresponds to a given 3-dimensional figure.	2	Identify models or illustrations of prisms, pyramids, cones, cylinders, and spheres.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Strand 4: Geometry and Measurement				
CONCEPT	**2008 PO**	**ITEM DESCRIPTION**	**2003 PO**	**ITEM DESCRIPTION**
1. Geometric Properties	4	Recognize which attributes (such as shape or area) change or don't change when plane figures are cut up or rearranged.*		
	5	Match or draw congruent figures in a given collection.	6	Identify congruent geometric shapes.
	6	Draw right, acute, obtuse, and straight angles and identify these angles in other geometric figures.	4	Classify angles (e.g., right, acute, obtuse, straight).
	7	Classify triangles by angles and sides.	5	Classify triangles as right, acute, or obtuse.
	M03-S4C1-04	**Moved to Grade 3**	7	Identify similar shapes.
		REMOVED	8	Draw a 2-dimensional shape that has line symmetry.
2. Transformation of Shapes		**REMOVED**	1	Demonstrate translation using geometric figures.
		REMOVED	2	Identify a tessellation.
3. Coordinate Geometry	1	Name, locate, and graph points in the first quadrant of a grid using ordered pairs.	1	Name the coordinates of a point plotted in the first quadrant.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards   Draft 02/25/08

Strand 4: Geometry and Measurement				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
3. Coordinate Geometry	2	Construct geometric figures with vertices at points on a coordinate grid.*		
	3	Plot line segments in the first quadrant in the coordinate plane from a table of values.*		
4. Measurement	1	Estimate the size of an object with respect to a given measureable attribute determining when an actual or estimated measure is needed.	1	Identify the appropriate measure of accuracy for the area of an object (e.g., sq. feet or sq. miles).
			4	Approximate measurements to the appropriate degree of accuracy.
	2	Compute elapsed time to the minute using a clock.	2	Compute elapsed time using a clock (e.g., hours and minutes since or until…) or a calendar (e.g., days, weeks, years since or until…).
	3	Select and use appropriate type of unit for the attribute being measured: • metric unit to the thousandths and • U.S. Customary to the eighths.	3	Select an appropriate tool to use in a particular measurement situation.
			7	Compare the weight of two objects using both U.S. customary and metric units.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Strand 4: Geometry and Measurement				
CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
4. Measurement	4	Solve problems involving conversions within the same measurement system.	6	State equivalent relationships (e.g., 3 teaspoons = 1 tablespoon, 16 cups = 1 gallon, 2000 pounds = 1 ton).
	5	Solve problems involving perimeter of plane figures and area of rectangles.	8	Determine the perimeter of simple polygons (e.g., square, rectangle, triangle).
			9	Determine the area of squares and rectangles.
			10	Differentiate between perimeter and area of quadrilaterals.
	6	Describe the change in perimeter or area when one attribute (length or width) of a rectangle is changed.	9	Determine the area of squares and rectangles.
			10	Differentiate between perimeter and area of quadrilaterals.
		REMOVED	5	Compare units of measure to determine *more* or *less* relationships including: • length - yards and miles, meters and kilometers, and • weight - pounds and tons, grams and kilograms.

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.

Arizona Department of Education: Arizona Academic Content Standards

Draft 02/25/08

MATHEMATICS CROSSWALK
2008 DRAFT MATHEMATICS STANDARD TO 2003 MATHEMATICS STANDARD
GRADE 4

CONCEPT	2008 PO	ITEM DESCRIPTION	2003 PO	ITEM DESCRIPTION
Strand 5: Structure and Logic				
1. Algorithms and Algorithmic Thinking	1	Discriminate necessary information from unnecessary information in a given word problem.	1	Discriminate necessary information from unnecessary information in a given grade-level appropriate word problem.
	2	Analyze common algorithms for computing with whole numbers using the commutative and associative property and concepts of place value.	2	Develop an algorithm to calculate the perimeter of simple polygons.
2. Logic, Reasoning, Arguments, and Mathematical Proof	1	Develop the problem-solving strategy of guess, check, and revise with justification.*		
	2	Solve a non-routine problem by selecting and using a strategy.*		
		REMOVED	1	Draw a conclusion from a Venn diagram.
		REMOVED	2	Identify simple valid arguments using *if…then* statements based on graphic organizers (e.g., 2-set Venn diagrams and pictures).

* This performance objective is new to the 2008 Draft Mathematics Standard Articulated by Grade Level.